1360 (5270)

HIGHLIGHTS OF BLISTER RUST CONTROL AND WHITE PINE MANAGEMENT MEETING REGION 1

Coeur d'Alene Supervisor's Office - Coeur d'Alene, Idaho
December 8-10, 1965

General Chairman - David A. Graham

ATTENDANCE AND PARTICIPANTS

Clearwater: John Bushfield, Gerald Franc, Don Temple, Robert Spencer, Tom Farbo

Coeur d'Alene: Harry Faulkner, Andy Fossum, Neil Hyde, Fred Rounds, Rudy Lood, Robert Cook, Lee Mason, Gus Verdal, Steve McDonald, Dave Gibney, Art Olson, Paul Prety

Colville: Jack Lyman, Wesley Kellie

Kaniksu: Emil Kulhanek, Orville Gastineau, Larry Smith, Jim Steinhouse

Kootenai: Frank Kapel, George Summerside

St. Joe: Clyde Miller, Oliver Goldammer, Dave Terry

Development and Improvement Branch: Virgil Moss, Wayne Bousfield, Don Brown, Frank Breakey

Division of Timber Management: Sam Evans, Jack Alley

Division of State and Private Forestry: Dave Ketcham, Dave Graham, Harvey Toko

National Park Service: John Reeves (Yellowstone), Charles Budge (Glacier)

Intermountain Station, Moscow: Don Leaphart, Glenn Deitschmann

Intermountain Station, Ogden: Jack Wikstrom

Wednesday, December 8

Opening Remarks: Graham

This meeting is being held primarily because of the many questions now being asked about where we stand on white pine management and blister rust control. Everyone here is vitally interested and concerned. Attendance of the timber management staff from each white pine forest was requested so that all of us would have an opportunity to get together on this subject. The white pine management guidelines have been revised and, while maybe not to everyone's complete satisfaction, they reflect the best information we have available at present.

The rust is spreading southward in limber and whitebark pine stands. Our area of survey and technical assistance responsibilities include, in addition to Region 1, the States of Wyoming, Colorado, northern Utah, and southern Idaho. A new find near Nounan, Idaho, extends the known limits a little and places it almost to the Idaho-Utah border. The rust is intensifying in previously known centers in northwestern Wyoming and southeastern Idaho.

No spring meeting is planned. The meeting scheduled for March 15-17 in FSM 6141.15, Emergency Directive No. 43, will be canceled. A fall field meeting is tentatively planned instead. Each Forest is asked to consider hosting such a session.

The total insect and disease control job is growing, and the increasing responsibilities are being recognized. The average annual loss data, as reported by the revised TRR, show that on the basis of either volume or dollars insect and disease losses are almost seven times that from fire. The 1965 workload analysis recognizes for the first time the Supervisor's and staff's insect and disease control recurrent workload. The Ranger Districts are also included. Base financing was provided for the first time during F.Y. 1966.

Aerial Spray Tests in 1965: Moss

Phytoactin L-544, a modified L-440 oil miscible formulation, was applied during September at the rate of 7.5 grams in 2 gallons No. 1 fuel oil per acre to replicated test plots in the Coeur d'Alene National Forest. Canker control efficacy of the oil miscible spray will be compared to Phytoactin L-318 standard treated plots and to untreated check plots in the same study area. Two different droplet size sprays were also tested, one about 100 microns mmd, and our regular standard of 200 microns mmd. Phytoactin L-544 differs from L-489, previously tested at a 1-gallon per acre rate in 1964, only in the amount of surfactant (Triton X-155) and the volume rate. The 1964 tests are to be first evaluated in 1966. All of the field work, including plot layout, is being done by the Coeur d'Alene.

Gas Chromatography Analyses of Fuel Oil in Pine Foliage: Moss

In a cooperative study with P-L Biochemicals, Inc., a method to accurately measure aerial spray coverage when oil is used as the carrier was developed. Phytoactin L-544 concentrate diluted in No. 1 fuel oil was applied with a backpack pressure sprayer to 10- to 20-year-old western white pine. Foliage samples from sprayed and unsprayed trees have been collected at 2 hours, 2 days, 1 week, 2 weeks, and 1 month after spraying. Gas chromatography analyses in parts per million fuel oil of the pine foliage are as follows:

Table 1.--Gas chromatography analyses

Treatment	Sample identification	Fuel oil analyses (p.p.m.) after the indicated times				
		2 hours	2 days	1 week	2 weeks	1 month
Phytoactin L-544	A (4 + 8)	1,500	100	110	39	20
Phytoactin L-544	B (2 + 3 + 7)	1,300	100	45	63	54
Control - no treatment	C (1 + 5 + 6)	<10 1/	<10 1/	<10 1/	<10 1/	<10 1/

1/ 10 p.p.m. was the minimum amount of fuel oil that could be accurately measured by the gas chromatography method.

Herbicide Spray Tests in 1965: Moss

Two new materials, Ansar 529 (monosodium acid methanearsonate) and Ansar 560 (sodium cacodylate) were tested on upland ribes in the Kaniksu National Forest. Ansar 529 is a 34.3 percent solution of monosodium acid methanearsonate by weight. One gallon of the concentrate contains 3.96 pounds of the acid and is equivalent to 7.20 pounds of disodium methanearsonate hexahydrate per gallon. Ansar 560 is a 22.6 percent solution of sodium cacodylate by weight. The concentrate contains the equivalent of 2.48 pounds of dimethylarsinic acid per gallon. The outstanding characteristics claimed for these two products are their relatively low order of mammalian toxicity, fast action, low cost, and lack of residual phytotoxicity in the soil. Spray solution was applied to the ribes with a backpack pressure sprayer first to the root crowns as a soil drench and then to the foliage. Both leaf surfaces and all stems were generously wet with the spray solution. Ribes viscosissimum was the principal species with a few lacustre scattered in each plot. Ribes were sprayed while still in active growth in early August. One 1/4-acre plot each was sprayed with Ansar 529 and Ansar 560. The two treatments will be evaluated in 1966.

Mistblower Foliar Treatments, 1963: Brown

A backpack mistblower was first used in 1963 to foliar treat an area on the Clearwater of 10- to 20-year-old white pine. The treatments applied to three blocks were: (a) 20 percent oil in water emulsion control, (b) Phytoactin L-318, 400 p.p.m., 20 percent oil in water emulsion, and (c) Phytoactin L-318, 800 p.p.m., 20 percent oil in water emulsion.

Only diseased trees that could recover if the treatment was successful were selected for study. Infections were examined and measured in October 1964 and October 1965. The three treatments show very little difference in average canker extension (table 2).

Table 2.--Average growth of stem cankers in 1963 foliar treatments between October 1964 and October 1965.[1] Brown's Creek, Clearwater National Forest

Foliar treatment, mistblower	No. of cankers	Stem diameter at canker center (inches)	Canker margin extension[2] A[3] (inches)	Canker margin extension[2] B[4] (percent)	Total stem encirclement (percent)
20 percent oil/water emulsion control	8	3.97	2.19	17.90	49.05
Phytoactin L-318, 800 p.p.m., 20 percent oil/water emulsion	10	3.70	2.40	20.64	50.83
Phytoactin L-318, 400 p.p.m., 20 percent oil/water emulsion	10	3.27	2.47	23.79	60.59

1/ Data selected from those cankers not completely encircling the stem.
2/ Measureable extension of margin of discoloration.
3/ Combined horizontal measurements for both lateral margins.
4/ Horizontal measurements expressed as percentage of stem circumference at canker center.

The presence of Tuberculina maxima sporulation was recorded in 1964 and 1965. Treatment differences in percentage of cankers with T. maxima were greater in 1965 than in 1964. The percentage of cankers with T. maxima in both 1964 and 1965 was nearly the same for all treatments (table 3).

Both these and all 1964 mistblower tests will continue to be evaluated.

Table 3.--Incidence of Tuberculina maxima in 1963 mistblower foliar treatments, Brown's Creek, Clearwater National Forest

Treatment	No. of trees	No. of cankers	Cankers with T. maxima sporulation 1964	1965	1964 & 1965 1/
			- - - - - - Percent - - - - - -		
20 percent oil/water emulsion control	22	40	67.5	37.5	30.0
Phytoactin L-318, 800 p.p.m., 20 percent oil/water emulsion	25	52	55.8	44.2	28.8
Phytoactin L-318, 400 p.p.m., 20 percent oil/water emulsion	32	49	65.3	55.1	32.7

1/ Cankers with T. maxima both years.

Western White Pine Blister Rust Protection Study: Brown

A designed study to determine blister rust prevention was started on the Clearwater in 1965. The degree and duration of foliage protection provided by three different treatments on three age classes will be evaluated in a controlled environment. Individuals representing three age classes are being concentrated in a test block approximately 1/2 chain wide and 1 chain long with the use of grafting.

Scions were cut from the ends of actively growing branches in 10- to 20-, 40- to 60-, and 80- to 100-year-old groups in March 1965. Three scions each were grafted to 10- to 15-year-old pine rootstock in the Clearwater National Forest in May 1965. An October 1965 examination showed 82.6 percent, 76.9 percent, and 77.8 percent success with at least one scion on reproduction (10 to 20 years), pole (40 to 60 years), and mature (80 to 100 years) respectively. Regrafting of failures and completion of ungrafted rootstock are planned for May 1966.

At least two seasons will be allowed for scion adjustment and growth. They will then be randomly assigned to three treatments, including the untreated checks. One year after treatment the scions will be inoculated under controlled conditions. Results will be analyzed for age class and treatment differences.

Seedling and Young Reproduction Studies: Bousfield

Results of several tests now show that Phytoactin foliar sprays applied in September will reduce blister rust infection incidence.

Phytoactin foliar sprays applied at 1,200 p.p.m., were more effective in preventing infections than when applied at 600 p.p.m. Future studies will be directed towards improving antibiotic penetration.

Small natural seedlings within an area on the Kootenai National Forest were foliar sprayed with Phytoactin 200 p.p.m., 20 percent oil, in June 1962. An examination by the Forest in 1965 showed that 6 percent of the trees in the sprayed area and 30 percent of the trees in the untreated area were infected.

It is expected that treatments will be more effective on older trees than on seedlings because of dilution. Seedlings usually more than double their weight the first year. To obtain long lasting effects, an antibiotic source must be made available. It may be possible to provide this with soil treatments.

An area basal-stem treated with cycloheximide and Phytoactin in June 1961 has been examined each year since treatment. Results show that cycloheximide solution with Triton B-1956 was more effective in killing cankers than solutions without Triton B-1956.

Canker mortality was higher and tree losses lower in those areas where Triton B-1956 was added to the cycloheximide solutions.

Phytoactin treatments used in this test were not considered effective.

All western white pine nursery stock was treated with a 10 percent oil-Phytoactin foliar spray during September 1965. About 500 gallons of solution were used on 5-1/2 million seedlings at Coeur d'Alene and 150 gallons on 1 million seedlings at Savenac.

C.Y. 1965 Accomplishments: Graham

Aerial spray costs per acre were lower during 1965 than for any previous year. This is in spite of many increases in fixed costs and is attributed to good management, better planning, lower helicopter contract bids in some cases, and the use of three helicopters from one helispot. Although all planned BRC spraying hours were not used, the minimum hour guarantee was met on all contracts.

Table 4.--BRC accomplishments by programs - C.Y. 1965

Program	Antibiotics			Total ribes eradication	Grand total
	Hand	Aerial	Total		
National Forest:					
Clearwater	560	1,820	2,380	3,150	5,530
Coeur d'Alene	840	21,550	22,390	990	23,380
Kaniksu	1,110	24,010	25,120	840	25,960
Kootenai	290	6,020	6,310	260	6,570
St. Joe	4,700	12,440	17,140	190	17,330
Total	7,500	65,840	73,340	5,430	78,770
State:					
Clearwater	180	1,530	1,710	0	1,710
Coeur d'Alene	0	770	770	0	770
Kaniksu	0	600	600	0	600
St. Joe	2,210	5,130	7,340	0	7,340
Subtotal	2,390	8,030	10,420	0	10,420
Private:					
Clearwater	1,690	3,330	5,020	90	5,110
St. Joe	1,020	2,370	3,390	0	3,390
Subtotal	2,710	5,700	8,410	90	8,500
Total	5,100	13,730	18,830	90	18,920
Grand Total	12,600	79,570	92,170	5,520	97,690

Table 5.--BRC accomplishments by Forests - C.Y. 1965

National Forest	Antibiotics			Total ribes eradication	Grand total
	Hand	Aerial	Total		
Clearwater	2,430	6,680	9,110	3,240	12,350
Coeur d'Alene	840	22,320	23,160	990	24,150
Kaniksu	1,110	24,610	25,720	840	26,560
Kootenai	290	6,020	6,310	260	6,570
St. Joe	7,930	19,940	27,870	190	28,060
Total	12,600	79,570	92,170	5,520	97,690

Table 6.--Stands examined using Stage II - 1965 (BRC funds)

Forest	No. of stands	Acres	Man-days
Clearwater	18	4,960	45
Coeur d'Alene	24	3,230	71
Kaniksu (Colville)	25 (2)	5,270 (515)	128 (3)
Kootenai	10	5,000	17
St. Joe	87	13,400	254
Total	164	31,860	515

Table 7.--Antibiotic effectiveness evaluations - 1965

	Forest	Basal stem			Aerial			Untreated			Total strips	Total trees	Total cankers	Man-days
		Strips	Trees	Cankers	Strips	Trees	Cankers	Strips	Trees	Cankers				
Strips established	Clearwater	2	100	122	4	89	118	4	85	106	10	274	346	57
	Coeur d'Alene	7	225	289	6	214	265	3	46	72	16	485	626	330
	Kaniksu	3	137	149	7	194	263	2	94	110	12	425	522	319
	Kootenai	1	31	38	2	85	97	2	34	42	5	150	177	51
	St. Joe	3	77	95	8	393	597	2	100	122	13	570	814	80
	Total	16	570	693	27	975	1,340	13	359	452	56	1,904	2,485	837
Previous strips evaluated	Clearwater	16	582	618	17	352	416	5	66	84	38	1,000	1,118	113
	Coeur d'Alene	5	108	170	9	181	320	2	55	114	16	344	604	24
	Kaniksu	25	678	887	12	626	874	4	139	178	41	1,443	1,939	144
	Kootenai	4	83	108				1	22	29	5	105	137	12
	St. Joe	17	405	562	27	744	1,345	9	255	392	53	1,404	2,299	229
	Total	67	1,856	2,345	65	1,903	2,955	21	537	797	153	4,296	6,097	522
All strips	Clearwater	18	682	740	21	441	534	9	151	190	48	1,274	1,464	170
	Coeur d'Alene	12	333	459	15	395	585	5	101	186	32	829	1,230	354
	Kaniksu	28	815	1,036	19	820	1,137	6	233	288	53	1,868	2,461	463
	Kootenai	5	114	146	2	85	97	3	56	71	10	255	314	63
	St. Joe	20	482	657	35	1,137	1,942	11	355	514	66	1,974	3,113	309
	Grand Total	83	2,426	3,038	92	2,878	4,295	34	896	1,249	209	6,200	8,582	1,359

Table 8.--Antibiotic retreatment - 1965

Unit	Basal stem[1]/ Basal stem[2]/	Basal stem[1]/ Aerial[2]/	Aerial[1]/ Basal stem[2]/	Aerial[1]/ Aerial[2]/	Total
Clearwater NF	520	380	--	--	900
Coeur d'Alene NF	300	1,540	540	5,540	7,920
Kaniksu NF	1,110	170	--	--	1,280
Kootenai NF					0
St. Joe NF	7,450	280	4,850	6,690	19,270
Total Forest	9,380	2,370	5,390	12,230	29,370
Glacier NP	460				460

1/ Previous treatment method.
2/ Retreatment method.

Table 9.--Aerial spray plans vs. accomplishments

Forest	Acres Planned	Acres Actual	Copter hours Planned	Copter hours Actual
Spring				
Clearwater	3,000	3,810	60	58.6
Coeur d'Alene	15,000	15,300	280	275.5
Kaniksu	12,000	15,910	210	264.7
St. Joe	13,000	12,380[1]/	270	208.0
Total	43,000	47,400	820	806.8
Fall				
Clearwater	4,000	2,870	90	47.9
Coeur d'Alene	9,500	7,020	230	125.3
Kaniksu	10,000	8,700	220	191.8
Kootenai	6,000	6,020	110	97.8
St. Joe	7,500	7,560	160	150.7
Total	37,000	32,170	810	613.5
Grand Total	80,000	79,570	1,630	1,420.3

1/ Includes July spraying.

Antibiotic Treatment Results: Graham

Despite intensifying efforts to evaluate antibiotic treatment effectiveness, we find ourselves with about the same tools we had to work with when we first started.

Determination of whether infections are "live" or "dead" has proved to be almost impossible. The possibility of natural or biological control confounding our results has made the job even more difficult.

Some of our older plots are beginning to show very encouraging differences in crop tree mortality between treated and untreated areas. This may be the method by which effectiveness is finally measured, but we hope to find some shortcuts. The Intermountain Forest and Range Experiment Station is working full time on this problem.

The results reported here are tentative, but they represent our evaluation effort during 1965.

Antibiotic Treatment Effectiveness Evaluations
1965

All areas were treated during 1963 or prior.

Trees recovered are those study trees that have all bole cankers classified as "controlled" or "dead."

All cankers classified as "controlled" or "dead" have not advanced around the bole (grown larger) since the previous measurement.

All trees that have since been girdled by a canker are calculated in this summary as "not recovered." This is regardless of the degree of encirclement at the time the tree was selected for study.

All trees that have all cankers in the "controlled" or "dead" class, but are girdled or almost girdled by one of these, are considered "not recovered." There may be some exceptions.

All trees that have been lost to causes other than blister rust since the time of initial selection have been dropped from the analysis.

Table 10.--Basal stem - Acti-dione with and without Triton, with scarification

Area	No. of trees	Trees recovered	Percent trees recovered
6-55	17	0	0
6-70	38	6	15.8
7-47	25	6	24.0
13-33	25	10	40.0
13-59	18	12	66.7
13-60	23	13	56.5
6	146	47	203.0

Calculations

$$\text{Percent recovered} = \frac{203.0}{6} = 33.8 \text{ percent}$$

$$SE = \sqrt{\frac{10,066.78 - 33.83\ (203.0)}{30}} = \pm\ 10.3 \text{ percent}$$

Table 11.--Basal stem - Acti-dione with and without Triton, no scarification

Area	No. of trees	Trees recovered	Percent trees recovered
5-1	39	11	28.2
5-5	15	3	20.0
5-7	23	5	21.7
5-8	25	7	28.0
5-9	38	16	42.1
5-20	25	7	28.0
5-33	45	12	26.7
5-34	37	4	10.8
5-36	25	11	44.0
5-40	46	9	19.6
5-42	32	9	28.1
5-43	34	2	5.9
5-44	99	21	21.2
5-45	25	1	4.0
5-46	49	6	12.2
5-48	23	4	17.4
6-7	15	0	0
13-17	23	2	8.7
13-25	44	7	15.9
13-26	25	2	8.0
14-4	26	8	30.8
14-6	26	12	46.2
18-14	24	2	8.3
18-32	19	2	10.5
18-33	14	5	35.7
18-34	15	7	46.7
18-35	10	5	50.0
18-36	15	12	80.0
18-42	16	12	75.0
18-46	23	15	65.2
18-49	34	20	58.8
31	909	239	897.7

Table 11.--Basal stem - Acti-dione with and without Triton, no scarification (con.)

Calculations

$$\text{Percent recovered} = \frac{897.7}{31} = 29.0 \text{ percent}$$

$$SE = \sqrt{\frac{39,237.06 - 29.0\ (897.7)}{930}} = \pm 3.8 \text{ percent}$$

Table 12.--Aerial - Phytoactin L-318 with soft water and pH adjusted

Area	No. of trees	Trees recovered	Percent trees recovered
13-511	25	1	4.0
18-54	25	6	24.0
18-55	48	8	16.7
18-56	44	1	2.3
18-57	51	16	31.4
18-58	25	5	20.0
18-65	25	2	8.0
18-66	28	4	14.3
18-67	17	5	29.4
18-77	40	18	45.0
10	328	66	195.1

Calculations

$$\text{Percent recovered} = \frac{195.1}{10} = 19.5 \text{ percent}$$

$$SE = \sqrt{\frac{5,420.0 - 19.5\ (195.1)}{90}} = \pm 4.2 \text{ percent}$$

Table 13.--Aerial - Phytoactin L-318, no soft water[1/]

Area	No. of trees	Trees recovered	Percent trees recovered
5-10	16	3	18.8
5-11	20	8	40.0
5-12	9	2	22.2
5-14	25	12	48.0
5-15	20	8	40.0
5-18	20	3	15.0
5-21	18	11	61.1
5-22	17	1	5.9
5-25	19	1	5.3
5-26	20	7	35.0
5-27	18	10	55.6
5-35	20	7	35.0
5-53	23	9	39.1
5-54	39	4	10.3
5-56	14	4	28.6
5-57	22	6	27.3
5-58	11	0	0
6-19	49	0	0
6-25	20	1	5.0
6-26	26	4	15.4
6-31	11	0	0
6-32	20	2	10.0
6-33	18	0	0
6-34	16	0	0
6-36	19	0	0
6-37	28	1	3.6
6-63	11	0	0
13-503	50	0	0
14-1	44	2	4.5
18-25	17	5	29.4
18-26	15	3	20.0
18-27	11	7	63.6
18-28	20	7	35.0
18-29	25	4	16.0

1/ A few areas were treated with solutions adjusted to a pH of less than 7.0.

Table 13.--Aerial - Phytoactin L-318, no soft water (con.)

Area	No. of trees	Trees recovered	Percent trees recovered
18-47	29	4	13.8
18-48	40	6	15.0
18-52	49	17	34.7
18-53	38	19	50.0
18-61	20	7	35.0
18-62	11	2	18.2
18-63	16	11	68.8
18-64	25	9	36.0
18-83	50	8	16.0
18-84	50	17	34.0
44	1,059	232	1,011.2

Calculations

$$\text{Percent recovered} = \frac{1,011.2}{44} = 23.0 \text{ percent}$$

$$SE = \sqrt{\frac{39,413.80 - 23.0\ (1,011.2)}{1,892}} = \pm 2.9 \text{ percent}$$

Table 14.--Untreated (control) areas

Area	No. of trees	Trees recovered	Percent trees recovered
5-901	7	0	0
5-902	9	1	11.1
5-903	10	0	0
5-904	20	2	10.0
5-905	14	8	57.1
6-13	30	0	0
6-18	12	0	0
6-19	14	0	0
13-49	19	2	10.5
14-7	40	1	2.5
18-00	12	5	41.7
18-43	13	2	15.4
18-44	31	5	16.1
18-50	51	12	23.5
18-51	45	3	6.7
18-69	23	1	4.3
18-79	23	1	4.3
17	373	43	203.2

Calculations

$$\text{Percent recovered} = \frac{203.2}{17} = 12.0 \text{ percent}$$

$$SE = \sqrt{\frac{6,469.50 - 12.0\,(203.2)}{272}} = \pm 3.8 \text{ percent}$$

Table 15.--New infections reported - 1965

Treatment	Number of trees: Total trees examined	Number of trees: Total infected trees 1/
Aerial - new formulation	328	3
Aerial - old formulation	1,147	15
Basal stem with scarification		
Acti-dione BR	146	0
Phytoactin (L-440)	104	4
Basal stem without scarification		
Acti-dione BR	955	6
Untreated checks	373	5

1/ Trees that have at least one infection that has developed since time of treatment.

Ribes Eradication - Aerial Spraying

The Clearwater National Forest reported and showed slides of their 1964 ribes aerial spray areas. A 50 percent kill on 2- and 3-year-old ribes using 2,4,5-T was reported. Tordon was also used, but did not show up as well as 2,4,5-T. All future aerial spraying will be done when the ribes are 2 years of age.

The St. Joe reported that they had aerially sprayed a 23-acre test plot of 2-year-old ribes with 2,4,5-T at the rate of 10 gallons per acre. The spraying was done on August 30, 1965. Results will be determined during 1966. Since this area had been planted to western white pine, 1,000 healthy pines were staked for study of spray effects. This is a test, not a recommended practice.

Ribes Eradication - Contracting

The Kaniksu reported that they had successfully completed one ribes contract during F.Y. 1965. The bid was for $11 an acre on a 40-acre area which had an average of 40 ribes per acre. The work standard was 0-0. They reported that they had good luck with the contractor and would let four or five more contracts in 1966 on 270 acres.

The Clearwater reported that they would let four or five contracts in 1966 on 200 to 400 acres. Blocks on both Forests will be less than 100 acres and the average will be 60 acres. Depending on conditions, work standards and a contract allowing a certain amount of ribes in feet of live stem per acre may be used. A real close look at our checking and sampling techniques will have to be made.

National Park Service - 1965: Reeves

Ribes eradication work was performed in Yellowstone and Rocky Mountain National Parks and antibiotic treatment in Glacier Park. No ribes eradication was done in Grand Teton or Glacier Parks.

There were 85 men employed on ribes eradication and some 20 men on antibiotics. These were stationed in five camps.

Table 16.--Accomplishments - C.Y. 1965

Working	Acres			
	Hand ribes	Chemical ribes	Basal stem[1]	Total
Initial	9,450	330	280	10,060
Retreatment	2,050	--	460	2,510

1/ Antibiotic used - L-440

Table 17.--Plans - C.Y. 1966

Working	Acres			
	Hand ribes	Chemical ribes	Basal stem	Total
Initial	9,700	250	400	10,350
Retreatment	4,460	50	200	4,710

Yellowstone Park crews conducted a white pine ribes distribution and disease survey for the Park Service Southwest Region at Bryce Canyon National Park and Cedar Breaks National Monument. The purpose of the survey was to determine if the disease was present and, if not, what the potential was for inception and spread. The data collected included ribes and pine by species, topography as to stream type, and other microclimate areas. A total of 11,880 acres were surveyed. No white pine blister rust was found. Maps are being prepared.

In Yellowstone Park the disease is intensifying in known infection centers along the northern part of the Park and spreading southward. A large-scale

and rather intensive survey made in 1964 showed the disease in six new locations. Several other infection centers were detected in the remote northern portions by aerial (helicopter) inspections. To date, no infection has been found in any of the original areas set up for control. Recent surveys indicate that ribes germination is stabilizing in these areas. Several additional control areas have been added to the program, and although some rust has been detected it appears likely that it can be prevented from intensifying.

Thursday, December 9

White Pine Management Policy Changes: Evans

We are taking a more critical look at white pine management. This is a "stop, look, and listen" period.

The "Management Objectives for Western White Pine Type," section 120, FSH 2415.1 R1 were read.

We will not plant western white pine after F.Y. 1969 because of difficulties in site preparation, primarily poor burns. We can plant after F.Y. 1969 in areas where all characteristics point toward feasible western white pine management; high site index, rolling terrain, and low ribes potential.

Some of the "Management Guidelines," section 162, FSH 2415.1 R1, were discussed.

Basically, we will manage for white pine only where white pine is needed to maintain stocking levels. Infected white pine will not be treated unless needed for minimum stocking.

We will not thin in white pine stands because we cannot predict blister rust losses.

Section 165, FSH 2415.1 R1 was read. Advance marking of white pine to be treated will be done whenever possible and with Timber Management and District personnel.

Growing white pine must be coordinated during each of the following steps:

1. Sale plan.
2. Sale preparation (block layout).
3. Sale advertised and sold.
4. Order nursery stock.
5. Timber is cut.
6. Site is prepared.
7. Ribes eradication.

Objectives of site preparation must include:

1. Hazard reduction.
2. Area cleanup.
3. Reduction of competing vegetation.
4. Exposure of mineral soil.

Areas to be planted to western white pine after F.Y. 1969 must be approved by the Regional Forester. Send requests in the very early stages of sale planning. Cover all the points that are to be considered as outlined in the Management Guidelines in your report. This may be in memorandum form.

Region 1 White Pine Planting Programs - Fiscal Years 1966-1969: Mason (Williams)

The management of western white pine may well be classed as a silviculturist's nightmare. Few people will disagree that, were it not for the white pine blister rust disease, western white pine is the most desirable species native to this Region. No other species furnishes lumber of such high quality, produces greater volumes per acre, or has a greater ability to propagate itself. The desirable attributes, unfortunately, disappeared when blister rust invaded western white pine production areas. There seems to be very little left to favor white pine management.

Western white pine has become a species that requires special treatments differing entirely from the standards which apply to other conifers. Instead of planting white pine at the optimum time within 1 year following the completion of planting site preparation work, we are obliged to watch a gradual deterioration of prepared sites during the 4-year period required for ribes seed germination and the eradication of these ribes from the area. Rescarification of the areas would be considered before planting other species to remove the competitive vegetation that has reinvaded the planting site, but this is impossible for white pine regeneration, for with each new disturbance the waiting period must be extended an additional 4 years to allow ribes seeds to germinate and the bushes to be eradicated from the area. By not planting freshly prepared sites, the following developments frequently result in addition to the loss of planting sites.

1. Where growth hormones are broadcast to eradicate the ribes bushes, growth of grass and sedges are stimulated with a sod formation resulting. Competition with grass is a major deterrent to plantation success for any species.

2. During the 4-year delay in planting, opportunities for white pine regeneration may be lost if the site becomes completely stocked with other species.

3. When white pine seedlings or transplants are planted amid established competitive vegetation, the trees are choked out or growth and vigor of the planted trees are greatly reduced for a number of years.

4. Nursery production must be timed to furnish stock for planting immediately following ribes eradication. Stock is frequently ready for planting before the area is.

5. Unless site preparation meets the high standards required for white pine regeneration, ribes eradication is economically not feasible and planting costs are high ($1 higher per each 100 trees planted for each year's delay in planting after the site is prepared). As the quality of site preparation decreases, the cost of planting and the survival percentage and vigor of the planted trees are reduced.

White pine planting programs in recent years have never approached the 4 million trees per annum objective established by the Region. Table 18 shows the Region's white pine regeneration program during the past 8 years. Also refer to table 19.

Table 18.--White pine planting accomplishments, fiscal years 1958-1965, Region 1

Item	Fiscal year 1958	1959	1960	1961	1962	1963	1964	1965	8-year totals
Acres	153	546	520	162	270	380	1,791	1,931	5,753
M trees	114	386	360	134	165	231	1,206	1,120	3,716
Percent of objective 1/	2.9	9.7	9.0	3.4	4.1	5.8	31.1	28.0	11.6
Trees per acre	745	706	692	827	611	608	673	580	646

1/ Regional western white pine planting objective--4 million trees per year.

Table 19.--Western white pine needs by fiscal years from 4-year planting plans 1963-1965

Fiscal year of plan	M trees requisitioned by F.Y. of 4-year plan 1965	1966	1967	1968	1969	1970
1963	2,190	4,274	3,500	3,618	--	--
1964	--	2,290	2,334	4,198	4,727	--
1965	--	--	1,397	1,342	2,003	1,888
Current-revised objectives	--	820	1,107	1,576	866	--

Nursery production of white pine planting stock has never been easy to project. It has been extremely difficult for a nurseryman to outguess the field. As you can see by the preceding table, there is no uniformity in what the estimated white pine planting stock needs for a given fiscal year will be from one year to the next.

White pine planting programs for fiscal years 1966 to 1969 have been revised by the white pine forests in line with the new White Pine Management Guides. Stock available at the nurseries exceeds estimated needs by almost 3-1/4 million trees (table 20).

Table 20.--Planting plans, fiscal years 1966-1969, western white pine, Region 1 (revised data as of December 2, 1965)

Forest	M trees needed by fiscal year 1966	1967	1968	1969	Total
Clearwater	306	283	440	516	1,545
Coeur d'Alene	40	--	161	--	201
Colville	--	--	--	--	--
Kaniksu	103	460	691	--	1,254
Kootenai	--	--	--	--	--
St. Joe	371	364	284	350	1,369
Total	820	1,107	1,576	866	4,369
SUMMARY					
White pine available at nurseries	1,589	3,362	2,657	--	7,608
Forest needs by fiscal year	820	1,107	1,576	866 1/	4,369
Surplus to needs	769	2,255	1,081	--	3,239

1/ To be held from surplus as transplants for fiscal year 1969; 3,239 M surplus total does not include 866 M for F.Y. 1969.

Any changes in the above plan must be submitted to the Division of Timber Management by January 15, 1966.

White pine planting programs are dependent upon the quality of site preparation. Timber sale reforestation plans within white pine management units, where silvicultural plans specify planting with western white pine, must be modified when site preparation results indicate that the quality of work makes ribes eradication and reforestation too expensive and the success unpredictable. White pine planting projects will be limited to the expansion of existing white pine plantings where blister rust control measures have already been applied. They may also include additional areas where the ribes potential is proved to be extremely light, and the potential for success is good.

Compartment Examinations: Alley

Discussed Stage II, form R1-2410-15.

Data collected on white pine blister rust during 1965 did not indicate canker location. The following are suggested ways to determine if a stand is treatable:

1. Eliminate stands that do not require diseased white pine for stocking.
2. Examiner's prescription.
3. Size of the stems.
4. Stand age (with exceptions).

Form R1-2410-15 may be revised to enable punching cards directly rather than using form R1-2410-17.

Stage II forms have been returned to the Forests. The summary forms are to be completed and returned to Jack Alley for punching. Instructions for the disposition of forms are covered in State and Private Forestry's November 9 memorandum to the Forests and designated 5270.

Status of Data Collected from the Forest for the White Pine Economic Study: Wikstrom

It is necessary to understand the process of economic management of white pine. There are two areas where we are lacking information:

1. Understanding of growth and growth potential.
2. Cost of management.

An adequate information system was needed to determine costs of management. A starting point was resource information. A cost of $20 vs. $80 per acre is unimportant unless the resource situation is described. An analysis of cost alone is no good. The resource situation is important.

Experiment Station and Region have to work together. The man on the ground needs tools to work with. He needs sufficient data to develop programs and costs. The resource manager needs information to make decisions or to consider costs.

All public agencies have to account for costs and accomplishments. A budget matrix will be in use by 1968. This is a plan of what is to be spent at the beginning of the year on which results at the end of the year will be compared.

The Washington Office committee has reviewed Forest data. Some Forests have done a very good job. There will have to be some changes in our bookkeeping procedures. We need to look at costs in relation to situation and the quality

of work being done. There is still a long way to go in getting costs down and understanding what affects costs of project. The cost study committee is trying to meet the needs of the man on the ground.

Cost data are not available from all areas. Ribes eradication and basal stem data not available. Additional information is needed. Forests are asked to compile cost and stand information for all areas worked during 1965. Forms were given to each Forest. These should be returned in two copies to the Division of State and Private Forestry prior to January 15.

Codes are the same for both the basal stem and the eradication forms. Average d.b.h. of treated trees, costs per acre, and cost per tree are needed. These items will be used as a beginning for cost analysis. Also include a total amount of the indirect costs chargeable to each kind of treatment. Do not include State and private lands.

There is a need for complete cost information on the Independence or Musselshell areas, Clearwater. The Coeur d'Alene has already provided this information for Potter Creek. The data should be from the beginning of management for the area by years. The total area, total area available for white pine, total man-days, and total costs are to be included. Costs by types of treatment for each project, such as K-V, are needed. We will hear more about cost accounting in the future. A better record and breakdown of money spent is needed. Guidelines to do the job will be developed soon.

Costs vs. quality of job go together, and the job must be described. Sam Evans said, "Develop a positive attitude on cost studies. If you don't know what it costs, you are not doing your job."

Plans for 1966: Graham

All of the Kaniksu's planting figures are subject to changes ranging from "minor" in 1966 to "significant" in 1968, because of availability of planting stock as now indicated by the nursery and Timber Management.

Compared to the past 3 years, there will be an acceleration of white pine planting in the next 3 years. The Coeur d'Alene is going to plant 300 acres immediately after burning. In spite of increased efforts to use stock that was originally ordered, there still will be a surplus. Plans will be finalized for stock in nursery on January 15, and the excess will be destroyed. This will prevent further nursery investment costs. Be sure all needs are known and the necessary eradication is planned. Some additional stock will be held for experimental work.

Any changes in the BRC financing required for the balance of F.Y. 1966 as shown must be sent to the Division of State and Private Forestry prior to January 10. An estimate of the total BRC funds needed for F.Y. 1967 should also be included.

Table 21.--Western white pine planting and eradication plans--acres (National Forest only)

Forest	F.Y. 1966 planting	C.Y. 1966 eradication	F.Y. 1967 planting	C.Y. 1967 eradication	F.Y. 1968 planting	C.Y. 1968 eradication	F.Y. 1969 planting	C.Y. 1969 eradication
Clearwater	570	(570) 4,550	530	420	820	1,000	960	1,500
Coeur d'Alene	70	(410) 2,150	--	400	300	100		700 1/
Colville	--	0		0		0		
Kaniksu	190	(1,130) 1,370	900	2,670	1,350	450		0
Kootenai		0		0				
St. Joe	690	(1,200) 2,700	670	1,300	530	1,200	650	800
Total	1,520	(3,310) 10,770	2,100	4,790	3,000	2,750	1,610	3,000

1/ 300 acres of this is experimental--200 acres of western white pine plus protection zone--all on Deception Creek Experimental Forest.

Figures in parentheses are "initial" work.

Table 22.--Ribes eradication plans - 1966

Unit	Ownership	Chemical		Hand		Total
		Ground	Copter	Regular	Contracting	
Clearwater	State and private	--	--	--	--	
	National Forest	200	450	3,600	300	4,550
	Total	200	450	3,600	300	4,550
Coeur d'Alene	National Forest	50	--	2,100	--	2,150
Kaniksu	State and private	--	--	--	--	
	National Forest	140	--	990	240	1,370
	Total	140	--	990	240	1,370
Kootenai	National Forest	0	0	0	0	0
St. Joe	State and private	--	--	1,000	--	1,000
	National Forest	--	200	2,500	--	2,700
	Total	--	200	3,500	--	3,700
Total	State and private	--	--	1,000	--	1,000
	National Forest	390	650	9,190	540	10,770
	Total	390	650	10,190	540	11,770
National Parks		300	--	14,160	--	14,460

Table 23.--Antibiotics inventory

Unit	Acti-dione (quarts)		L-440 (gallons)	L-318 (gallons)
	On hand	Ordered planned[1]	on hand	on hand
Clearwater	121	60	2½	210
Coeur d'Alene	98	60	9	97
Kaniksu	40	48	0	44
Kootenai	24	48	32	0
St. Joe	156	50	0	0
Total Forest	439	266	43½	351
Glacier Park	2		27	0

1/ Prior to June 30, 1966.

Table 24.--Blister rust control financial plan December 1, 1965-June 30, 1966

Forest	Item	042-045	411-414[1/]	Cooperative deposits
Clearwater	Balance	$117,750	$32,000	$29,000
	Planned	117,750	25,000	2,000
	Difference	0	+7,000	+27,000
Coeur d'Alene	Balance	86,000	2,200	2,200
	Planned	74,000	0	0
	Difference	+12,000	+2,200	+2,200
Kaniksu	Balance	74,700	4,700	11,800
	Planned	74,700	4,700	1,900
	Difference	0	0	+9,900
Kootenai	Balance	13,350		--
	Planned	6,850		--
	Difference	+6,500		
St. Joe	Balance	46,400	6,500	9,950
	Planned	58,400	6,500	9,950
	Difference	-12,000	0	0
Total	Balance	338,200	45,400	52,950
	Planned	331,700	36,200	13,850
	Difference	+$6,500	+$9,200	+$39,100

1/ Included under "042."

Much more surveying will be done during the next 2 years; both what has been done and what is left to do. Information on the blister rust situation in stands where ribes eradication has been accomplished will be collected. Details on methods to be used will be provided prior to the start of the field season.

Compartment examinations are required before antibiotic treatment is done. Eradication areas must be status checked before treatment unless it is obviously not needed. Some areas or parts of areas recently have been worked that did not require it.

Basal stem treatment during 1965 was done in areas that were not surveyed by Stage II survey prior to treatment. The information collected after treatment will be used in the cost study.

A complete Stage II reexamination may not be needed in 5 years, but it is important to schedule another look at these stands in 5 years. Results from

treatments may not be as expected, and additional information may be needed to make a decision on what to do. At that time, only as much of an examination as is needed to obtain the required information is made. It does not have to be a complete Stage II examination.

Consider planting areas carefully. Don't disturb adjacent areas. For example, don't plant a 40-acre isolated block and then disturb surrounding area so that an extremely large protection area is needed for the small plantation. Use judgment in selecting areas to be planted.

Basal stem treatment is needed in some areas because the ribes eradication job was late. Some areas were planted prior to ribes eradication. There is not as much infection in areas where ribes eradication has been on time. Avoid planting isolated tracts, and some of the ribes eradication and protection zone problems will be avoided.

For white pine management, "units" are compartments or subcompartments in which white pine is to be grown. These should be carefully identified and information provided to each Ranger District as well as all concerned at the Supervisor's Office. If old, outdated maps giving this information are posted on in the active files, they should be updated or changed as soon as possible. Set up periodic visits with Ranger District key personnel to discuss BRC needs and program.

Review all antibiotic effectiveness evaluation study strips from the standpoint of future usefulness. If the majority of the trees and/or cankers on a strip were poorly selected (tree suppressed or intermediate, study canker or another canker too far advanced), or if too many trees have been lost to causes other than blister rust, the strip should be dropped. Do not drop strips merely because results are poor.

In 1966 evaluate remaining strips--

--in all areas basal stem treated and scarified or slit during 1964 and prior
--in about 10 areas aerially treated during 1963 and 1964
--in all control (untreated) areas established during 1964 and prior.

In basal stem treatment areas, establish strips in 1966 before treatment with control trees adequately marked so that treated and control will be in the same strip. About 50 trees in each area with 15 of these untreated will be adequate if entire area is sampled as much as possible. The 15 "controls" must be at random along the study strip.

Friday, December 10

Miscellaneous BRC Topics: Graham

1. New fiscal year report forms

   The new 5200 forms should be ordered now. (FSM 5276.21). This reference gives the form number and title, and information on what is to be included in the narrative report. The guidelines for fungicide maintenance have not been developed. Form 5200-6 and the instructions should receive special study.

2. Annual (calendar year) report

   This will probably be the last year this report will be submitted. Considerable interest in this report has been shown by our cooperators. A brief report on a fiscal year basis will be published in the future. Development and Improvement reports in the future will probably be published separately.

3. Multiple use impact report needs

   A report is needed for all chemical ribes eradication. No report is required for hand eradication and antibiotic treatment. The approving level is the Forest Supervisor. All projects involving the use of insecticides require a report. The approving level for these is the Regional Office. Refer to FSM 2140, Supplement No. 6.

4. Personnel

   Blister rust control is committed to use the standard job descriptions developed last year. All supervisory and technical positions will be classified. These position descriptions are forms 6150-41 through 6150-51. The assistant camp boss may be upgraded. Another meeting with Personnel people to review these positions may be held. A special blister rust supervisory position still needs to be developed in order to get desired people to qualify.

5. FSH 5277 revision plan

   Further handbook revisions are to be made this winter. Tentative plans are to ask help from Forests. One or two men will be detailed to the Regional Office. Revisions will be made before next season. This includes all chapters and is a followup to the work started last winter. A schedule will be developed soon.

6. Display case

All pictures have been tinted so light exposure is no longer a problem. A timer switch and new leg mounts have been installed. It is available on request. We have plans to develop two to four other subjects--other forest diseases and insects. A schedule will be developed in the near future.

7. Radio use and financing

The use of project funds for radio financing is justified for radios used in the BRC program. Radios that are taken into the field for fire purposes and not really necessary for BRC should not be financed with BRC project funds. Adjustments may have to be made by some Forests.

8. Functional accounting

Guidelines for using the new functional accounts (045, 414, etc.) cannot be completed until the revised issue of FSH 1253.6, Regional Office Correlated Workload Analysis Handbook, is received. A Regional Office manual supplement will be issued at that time.

"Program direction" and "technical services" together approximate what was formerly called leadership.

All BRC expenditures will be identified by States. Reference FSM 6561.1, R-1 Supplement No. 121.

At the end of each fiscal year a portion of the 604 general expense (900 series accounts) is to be charged back (prorated) to 045 and 414 if used. The balance will be charged back to 042 and 411. "Administrative costs" must be identified and reported.

9. Report on Dr. Furnival's visit

Dr. Furnival (biometrician from the Washington Office) took a look at our antibiotic effectiveness evaluation procedures. His visit can be summarized as follows:

a. Evaluating effectiveness of antibiotics from evaluation strips will not be possible. This can only be done with statistically designed developmental plots.

b. Information collected on project treated areas will be worthwhile as a measurement of work quality.

c. Canker measurements should be looked at closer to determine if there is a correlation between canker measurements and bioassay results.

d. There seems to be an opportunity to check on antibiotic effectiveness by means of a mortality comparison.

e. Efforts possibly should be concentrated on one area rather than taking a small sample on several large areas.

We plan to modify our procedures where needed on the basis of these recommendations.

10. Plans for aerial spray equipment

Refer to 5270 memorandum of November 2, 1965, regarding spray equipment. All spray equipment should be retained and kept in ready-to-go status. Do not cannibalize or allow to deteriorate. Keep all pool vehicles and pay monthly use rate for this year.

The exception would be equipment that needs more than minor repair before it can be used for another season. These should be turned in.

11. L-440

Hold all L-440 on hand and do not use. A decision on using L-440 will be made after 1966 evaluations are completed.

12. Regional antibiotic evaluation survey

The purpose of the survey was to see if all Forests were evaluating study trees alike. Results of the evaluation showed some deviations by all Forests from established procedures as follows:

a. All cankers on trees were not recorded.

b. All cankers were not pinned, and pinning was not accurate.

c. Cankers on trees were recorded as "controlled" ~~on~~ or "dead" ~~or~~ or almost-dead trees.

d. Cankers were recorded as "controlled" when lack of growth could not be shown.

e. Strip maintenance is still a problem; strips not always well marked or painted.

f. Some cankers are still being selected for study that are more than one-half the way around tree boles.

13. Ribes eradication in maintenance areas

There may be a need for additional eradication on selected areas where adequate eradication has been done in the past. Before we do ribes eradication the following information must be collected by survey:

a. Amount of new rust, if any, getting into area.

b. Ribes population and location by status checking.

Stocking and damage survey techniques may be used. It may be possible to incorporate this with Stage II.